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ULTRASOUND PROPERTY OF ARTICULAR CARTILAGE IN SEVERE VARUS KNEE OSTEOARTHRITIS

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Aim of Study. To evaluate degenerated and seemingly normal cartilage in severe varus knee OA, the ultrasound indices of stiffness, surface irregularity and thickness were measured during total knee arthroplasty. Methods. The three indices of ultrasound were measured in twenty knees of twenty subjects, 2 males and 18 females, mean age of 76 years (68 to 83), who underwent the surgery. Five hundred and ten points measured were classified into seven sites; site 3: femoral lateral condyle (anterior), site 4: femoral lateral condyle (posterior), site 7: femoral medial condyle, site 9: lateral tibial plateau (center), site 10: lateral tibial plateau (under the meniscus), site 11: medial tibial plateau (anterior), and site 12: medial tibial plateau (posterior). The points were also evaluated macroscopically using the grading of International Cartilage Repair Society (ICRS grade). Results. At site 3, 4, 9 and 10, grade-0 cartilage shared 51%, 65%, 2% and 80% respectively and at site 7, 11 and 12, it shared 0%. ANOVA revealed that the index of stiffness in grade-0 cartilage was significantly higher (stiffer) than those in grade-1, -2 or -3 ($p<0.001$). The index of grade-0 cartilage of the site 4 was higher than that of site 3 or 10 ($p<0.01$). Index of surface irregularity of grade-1 and -2 cartilage was higher (more irregular) than that of grade-0 ($p<0.01$). The index of thickness of grade-1 was higher (thicker) than that of grade-0 ($p<0.05$) and that of grade-3 was lower (thinner) than those of grade-0, -1, or -2 ($p<0.001$). Conclusions. Because ultrasound is related to the extracellular matrix collagen and its fibrillar network, the index of stiffness indicates that the collagen network in severe varus knee OA has already deteriorated in medial component but is maintained in the lateral. Site-specific difference in the index of grade-0 in the lateral component suggests that early events may occur in the surface of seemingly normal cartilage. In order to prevent the progression of OA, therefore, collagen network damage should be detected in early stage of osteoarthritis.

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ABNORMAL ANKLE SCINTIGRAPHY IN A COHORT WITH KNEE OSTEOARTHRTIS

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Aim: Ankle arthritis is considered a rare entity and typically a sequela of injury. The goal of this study was to evaluate the prevalence of ankle abnormalities in a cohort with knee OA, using bone scintigraphy, a sensitive method for detecting metabolic abnormalities of joints. We hypothesized that factors in addition to overt injury could be risk factors for ankle OA, including knee OA or malalignment of the knee.
Methods: Participants in the Prediction of Osteoarthritis Progression (POP) study (n=159; 118 female, 41 male; mean age 64 years), met ACR criteria for knee OA and had radiographic OA (Kellgren-Lawrence grades 1-3) in at least one knee. Late phase uptake of technetium-99m methylene diphosphonate by the ankle or forefoot (at 2.5 hours post injection) was assessed as normal or increased on a whole body scan. Ankle symptoms were assessed from a menu of "joints that bothered you in the past year". Self reported ankle or foot injury was recorded in a general medical history. Knee alignment was measured from a long-limb radiograph. Logistic regression modeling was performed with JMP software (SAS, Cary, NC).
Results: One or both ankles bothered 23% of participants during the previous year. Scintigraphic abnormality of one or both ankles occurred in 23%; this figure rose to 50% when either foot or ankle uptake was considered. A symptomatic ankle was 1.9 times more likely to have a positive bone scan. Table 1 depicts the concordance of symptoms and abnormalities by bone scintigraphy for the n=318 assessed ankles.

Table 1

	Negative Bone Scan	Positive Bone Scan
No Ankle Symptoms	#220 (69%)	#42 (13%)
Yes Ankle Symptoms	#39 (12%)	#17 (5%)

Surgery or ankle injury was reported for 4% of ankles. A larger proportion of ankles with scintigraphic abnormalities had a history of associated ankle surgery or injury (12%), compared with those without ankle scintigraphic abnormalities (3%), p=0.005. In multivariate logistic models controlling for the other variables, ankle scintigraphic abnormalities were associated with ankle injury or surgery (p=0.04) and ankle symptoms (p=0.02), but not body mass index. The degree of knee malalignment was associated with ankle symptoms (p=0.05), but not ankle scintigraphic abnormalities.
Conclusions: The literature related to the prevalence of symptomatic ankle OA is limited, but available references are in general agreement that ankle OA is rare, occurring at a rate of $<$ 1%, with a frequency nine times less than that of knee or hip OA. Our study demonstrates that metabolic abnormalities of the ankle and forefoot are common in this cohort with knee OA. Although a history of ankle injury or surgery was fourfold more common for ankles with scintigraphic abnormalities, these risk factors were reported by only 12% of participants with abnormal ankle bone scans, suggesting that additional factors may contribute to ankle pathology in a knee OA cohort. Longitudinal investigation of this cohort is ongoing to determine if an abnormality of the ankle by bone scintigraphy is predictive of subsequent radiographic OA, as has been found for knee OA.

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KELLGREN-LAWRENCE SCORES AND ARTHROSCOPIC FINDINGS IN THE DEGENERATIVE KNEE

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Introduction: Other studies have shown that the K-L radiographic score can differentiate the severity of osteoarthritis when compared to MRI findings. However, the correlation of the K-L score with arthroscopic findings has been limited. The purpose of this study is to determine if differences in arthroscopic findings exist between knees with Grade 3 and Grade 4 K-L scores.
Methods: Tibiofemoral knee osteoarthritis was graded according to the Kellgren-Lawrence (K-L) scale in 89 knees presenting for arthroscopic treatment of osteoarthritis of the knee. The study group consisted of 55 males and 34 females with an average age of 55 (range 37 to 88) years. There was no age difference between gender. All radiographs were examined independently by two orthopedic surgeons and arthroscopic data was collected prospectively and recorded by orthopedic surgeon. At surgery, the surgeon was unaware of the documented K=L score.
Results: On review of radiographs, 5 knees had a Grade 2 K-